

An examination of quality of care in Norwegian nursing homes – a change to more activities?

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Background: Studies on Norwegian nursing homes have shown that the general care is at a relatively high level, while the level of physical and social activities is relatively low. As a response to these findings, the Norwegian government has stressed the importance of activities in various white papers and circulars and, in recent years, has launched several campaigns specifically aimed at increasing the level of activities.

Aim: The aim of the study was to examine the following: (i) how the government has succeeded in increasing the level of physical and social activities in Norwegian nursing homes; (ii) how the level of activities compares to the general care; and (iii) how the level of activities and the general care are influenced by the following facility characteristics: residents' mobility level, total staffing levels, ratio of RNs, ratio of unlicensed staff and ward size.

Method: A cross-sectional survey of forty nursing home wards throughout Norway was used to collect the data.

Results: On a scale ranging from 1 to 7, the staff members assess the activity dimension to be 4.31 and the general care dimension to be 5.66. The activity dimension was significantly negatively correlated with the ratio of unlicensed staff, the ratio of Registered Nurses and the residents' mobility level, while the general care dimension was significantly negatively correlated with the ratio of unlicensed staff.

Conclusion: The study shows that the level of physical and social activities offered to the residents is relatively low, while the general care level is significantly higher, in line with earlier studies. Consequently, the government has not succeeded with its current policy to increase the level of activities in nursing homes. The relationship between the two quality dimensions and the explanatory variables shows that nursing home quality is a complicated phenomenon.

Keywords: long-term care, nursing homes, quality of care, quality dimensions, public health nursing, health service research.

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Introduction

Quality of care in nursing homes is considered a complex and multidimensional phenomenon (1–4). As a consequence, there is no general consensus on how it should be defined or assessed. In his seminal work, Donabedian (5) suggested three approaches: structure, process and outcome. 'Structure' referred to the general conditions that affect the ability to deliver care, such as staffing levels, staffing mix and physical characteristics of the nursing home; 'process' referred to work processes, routines and procedures that are established to ensure that the care is properly delivered; and 'outcome' referred to the

end result for the residents – do they receive good and adequate care? According to Donabedian, outcomes were the ultimate validation of quality, although also the most complicated and time-consuming to measure (5).

Traditionally, nursing home quality has further been divided into quality of care and quality of life (4, 6). According to this division, 'quality of care' encompasses clinical outcomes, such as the prevalence of pressure ulcers, weight loss, catheters, PEG, certain types of medication and restraints, and focuses on the quality and safety of care (7–9). 'Quality of life', on the other hand, encompasses residents' well-being and their opportunities for choice, autonomy, privacy and meaningful social and physical activities (6, 10). Historically, the pursuit of quality of care has been prioritised over the pursuit of quality of life in nursing homes (11–13).

In Norway, nursing home quality is defined by 'The national regulation of quality of care services regulated

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in the municipal health act and the social service act (14). The regulation has shown to be well suited for measuring quality of care in nursing homes (15) and has been used to develop quality of care items and questionnaires in several previous studies (15–17). According to the regulation, quality of care is a multidimensional phenomenon that encompasses both quality of care and quality of life dimensions (1, 10, 18). Thus, the focus is not only on the presence of deficiencies and the lack of adequate care, but also on the presence of positive outcomes for the resident (3, 16, 17). In this study, we define the term quality of care in accordance with the national regulation of quality of care services (14). The labels, ‘general care’ and ‘physical and social activities’, are representing two of the main quality dimensions in the regulation.

In earlier Norwegian studies of quality of care in nursing homes, the general care has been assessed to be at a relatively high level (15–18) while the level of physical and social activities offered to the residents has been assessed to be relatively low (15, 16, 18). The low levels of activities reported from these studies have been of concern to the government, and as a response, several white papers and circulars in recent years have stressed the importance of increasing the level of various activities in nursing homes (3, 13). In 2007, the government also launched its own circular on activity in old age (19) and a large grant entitled ‘Den kulturelle spaserstokken’ (The Cultural Walking Stick), specifically aimed to increase the level of activities in nursing homes (13).

An interesting question is whether or not this extensive focus has resulted in more physical and social activities in nursing homes in recent years? In other words, have the government, and the municipalities responsible for operating the nursing homes, succeeded with their policy of increasing the level of activities? This study aims to examine this question using data from a questionnaire distributed to 444 Norwegian healthcare providers in 40 nursing home wards throughout Norway in the first years after the launch of the ‘Care Plan 2015’ (13). Furthermore, we aim to examine how the level of activities compares to the general care, and how nursing home quality is influenced by resident, staffing and ward characteristics.

Norwegian research on quality of care in nursing homes

Earlier studies on quality of care in Norwegian nursing homes are, as mentioned, fairly unambiguous: overall, the general care is assessed to be at a relatively high level, while the level of social and physical activities offered to the residents is assessed to be low (15–18, 20, 21). For example, in Paulsen et al. (16), the general care dimension received a score of 73 and the social

activity dimension scored 57 on a scale ranging from 1 to 100. Twenty-nine nursing home wards and 568 staff members participated in the questionnaire-based study. Romøren (15) found similar results: acceptable scores on the general care items but low scores on items related to physical and social activities. The quality assessment was conducted by residents ($n = 81$), relatives ($n = 189$) and staff members ($n = 173$). Kirkevold et al. (17) also found acceptable scores for general care items and low scores on items measuring physical and social activities. A total of 1926 residents in 251 nursing home wards were included in their study, and the quality of care assessment was conducted by interviewing nurses and administrators regarding the residents’ quality of care. The results from other Norwegian studies (18, 21, 22) show the same pattern: relatively high levels of general care and low scores on social and physical activities.

The low levels of social and physical activities are not unique to Norway. Studies from other Scandinavian countries (23, 24) and the United States (25, 26) have found similar results. The Eden alternative (27) and culture change movement (28) in the United States may be seen as a response to this historically low attention paid to activities in nursing homes.

Factors influencing the quality of care

Quality of care in nursing homes has shown to be influenced by resident, staffing and ward characteristics (17, 29–33). Regarding ‘resident characteristics’ or functional level, it is found to be negatively associated with perceived quality, that is the more care needs the residents have, the lower perceived quality. The negative relationship has shown to be particularly strong for the quality dimension of activities (17). Staffing may be divided into ‘total staffing levels’, ‘ratio of Registered Nurses’ (RN) and ‘ratio of unlicensed staff’ (care staff without any healthcare training). International studies indicate that, for the most part, higher total staffing levels and a higher ratio of RNs are positively associated with quality of care, while a higher ratio of unlicensed staff is negatively associated with quality of care (4, 34, 35). ‘Ward size’ has shown an inconsistent association with quality of care, although there is some support for smaller wards being associated with higher quality levels (17, 36). However, the terminology concerning size is inconsistent: some studies use the variable ‘ward size’, while others use the variable ‘facility size’. In this study, we use ward size, in line with Kirkevold et al. (17). Regarding ward size, the Norwegian Government has strongly supported the use of smaller wards in recent years (37, 38), and to receive grants from the Norwegian State Housing Bank when refurbishing or building new nursing homes, small ward is a prerequisite (39).

Aim

The aim of the study was to examine the following: (i) how the government has succeeded in increasing the level of physical and social activities in Norwegian nursing homes; (ii) how the level of activities compares to the general care; and (iii) how the level of activities and the general care are influenced by the following facility characteristics: residents' mobility level, total staffing levels, ratio of RNs, ratio of unlicensed staff and ward size.

Methods

Design

A cross-sectional design was used to collect the data required to test our research questions.

Sample

Four hundred and forty-four staff members from 40 wards located in 22 nursing homes participated in the study. The 22 nursing homes, located throughout Norway, ranged in size from 20 to 152 beds, with a mean of 63. The facilities were located in towns in eleven medium- (6 000–20 000 inhabitants) and large-sized (>20 000 inhabitants) municipalities in seven counties across Norway – Finnmark, Nord-Trøndelag, Hordaland, Hedmark, Oslo, Akershus and Aust-Agder. Small municipalities were excluded because they tend to have significantly more nursing home beds per capita than larger municipalities (KOSTRA). The seven counties were selected to achieve geographical spread. Special care units for dementia were excluded, as such wards often have a different structure and relatively more staff than general wards. All the nursing homes were public and nonprofit in nature and were owned and run by the municipalities.

The questionnaire

The questionnaire assessing the quality level was developed based on the national regulation of quality of care services regulated in the municipal health act and the social service act (14) and prior Norwegian studies about nursing home quality (15–17). The questionnaire assessed different dimensions of quality of care, but only two quality dimensions were used in this study: 'general care' and 'physical and social activities'.

Ethical considerations

The study has been approved by the Norwegian Social Science Data Services (NSD), an institution that approves

and assists researchers with data gathering, data analysis, privacy issues and research ethics. All data in the study were anonymous, and no separate data about any residents were collected. Consent procedures for this study were approved by staff and residents. Consent procedures included a description of the study and measures taken to ensure confidentiality and the voluntary nature of the study (40).

Data collection

The questionnaire was personally distributed to the staff (RN, enrolled nurses and unlicensed staff) by the second author. Staffs who only worked on night shifts were excluded from the study because their work setting differed substantially from that of their colleagues, and staffs who had worked less than eight weeks on their ward were excluded due to their lack of experience. The questionnaires were completed anonymously and returned in sealed envelopes in a box located in the wards' staff rooms. Altogether 444 questionnaires of 510 were returned, with a range of 5–19 per ward and a mean of 11.4. The response rate from the 40 wards varied from 71% to 100%, with a total response rate of 87%.

Information about ward size and staffing levels and mix were obtained through interviews with first-line managers, while data about the residents' mobility level were obtained through interviews with first-line managers, care staff and field observations. The data were collected from September 2007 to October 2008.

Study variables

The two quality of care dimensions, 'general care' and 'physical and social activities', were developed based on 'The national regulation of quality of care services regulated in the municipal health act and the social service act' (14). The general care dimensions (6 variables/items) encompassed aspects such as end of life care (2), treatment of pressure ulcers (1), oral care (1) and professional focus (2). The physical and social activity dimension (4 variables/items) encompassed aspects such as organised physical exercise (1), walking exercise (1), social activities (1) and social interactions between the staff and the residents (1) (see Table 1). Internal consistency of the two dimensions/indices was high, with Cronbach's alphas of 0.84 for general care and 0.82 for physical and social activities. Factor analysis (using the Varimax method of rotation) showed that the staff members assessed the dimension of general care and activities differently (Table 1).

Five explanatory variables were used in the analyses: residents' mobility level, total staffing levels, ratio of RNs, ratio of unlicensed staff and ward size. The residents'

Table 1 Factor analysis of quality items – general care and activities

	Component	
	1	2
The care workers have a high professional focus (<i>general care</i>)	0.835	
The ward has relevant procedures in relation to death (<i>general care</i>)	0.808	
The ward gives good care to terminal residents (<i>general care</i>)	0.804	
All pressure ulcers are treated adequately and immediately (<i>general care</i>)	0.798	
The resident receives adequate and appropriate oral care daily (<i>general care</i>)	0.644	
The staff write down all relevant care information in the journal (<i>general care</i>)	0.474	
The residents are offered organised physical exercise (<i>activities</i>)		0.878
The residents are offered a sufficient amount of social activities (<i>activities</i>)		0.825
The residents who need walking exercise are offered this in a sufficient way (<i>activities</i>)		0.810
The care workers interact socially with the residents (<i>activities</i>)	0.569	0.630

Extraction method: Principal Component Analysis.

Rotation method: Varimax with Kaiser Normalisation.

Only values > 0.4 included in the table.

mobility level was measured by two factors: the percentage of residents dependent on a wheelchair and the percentage of residents dependent on a patient lift during care, each of which was allocated a score from 1 to 7 (see Table 2). The data were obtained through interview with first-line managers, care staff and field observations.

Staffing data were obtained through a questionnaire completed by first-line managers. Total staffing levels were measured by dividing the total full-time equivalent of staff by the number of residents on the ward. Only staffs directly involved with patient care were included. The ratio of RNs was measured by dividing the total full-time equivalent of RNs in permanent positions by the total staffing levels. As for total staffing levels, only RNs directly involved with patient care were included. The ratio of unlicensed staff was gathered through questionnaires completed by first-line managers in which they were asked to report the percentage of unlicensed staff present on the ward during an average working day. This method was used because of the high number of vacant positions in several nursing homes and the fact that unlicensed staffs are overrepresented in such positions (41). If we had based the measurement of unlicensed staff on the official ratio of these staff in permanent positions, the ratio would have been considerably underestimated.

Table 2 Descriptive statistics – quality items and explanatory variables

	Mean	Min-Max	SD
Physical and social activities (<i>n</i> = 444 staff and 40 wards)			
The residents are offered organised physical exercise	4.06	1.60–6.33	1.40
The residents who need walking exercise are offered this in a sufficient way	4.12	2.75–5.47	0.75
The residents are offered a sufficient amount of social activities	4.22	1.40–5.50	0.93
The care workers interact socially with the residents	4.86	3.09–6.43	0.81
Mean physical and social activities – (Cronbach's alpha = 0.82)	4.31	2.21–5.93	0.97
General care (<i>n</i> = 444 staff and 40 wards)			
The staff write down all relevant care information in the journal	5.70	4.28–6.86	0.60
The resident receives adequate and appropriate oral care daily	4.94	3.63–6.38	0.65
All pressure ulcers are treated adequately and immediately	6.04	4.40–7.00	0.63
The ward gives good care to terminal residents	6.20	4.60–7.00	0.55
The ward has relevant procedures in relation to death	6.30	5.16–7.00	0.50
The care workers have a high professional focus	4.79	3.00–6.57	0.93
Mean general care – (Cronbach's alpha = 0.84)	5.66	4.18–6.80	0.64
Ward size (<i>n</i> = 40 wards)			
Residents per ward	18.35	7–34	9.43
Staffing (<i>n</i> = 40 wards)			
Total staffing level – FTE per residents per year	0.81	0.67–0.99	0.08
Ratio of Registered Nurses	0.27	0.11–0.55	0.10
Ratio of unlicensed staff	0.19	0.05–0.50	0.10
Residents mobility level (<i>n</i> = 40 wards)			
Percentage of residents using wheelchair ^a	4.73	1–7	1.96
Percentage of residents using elevator during care ^b	4.43	1–7	1.92

^a(1 = <5%, 2 = 5–10%, 3 = 10–20%, 4 = 20–30%, 5 = 30–40%, 6 = 40–50% and 7 > 50%).

^b(1 = <5%, 2 = 5–10%, 3 = 10–15%, 4 = 15–20%, 5 = 20–25%, 6 = 25–30% and 7 > 30%).

Data analysis

The two quality of care dimensions, general care (6 items) and physical and social activities (4 items), were analysed by calculating their mean score (see Table 2). The calculation was performed at ward level to avoid the larger wards being overrepresented. In the regression analysis, aiming to explain the variance in quality of care between the wards, separate two-level analyses were conducted. Two-level analyses were used as the data

came from two different levels – 444 individual staff members and 40 wards. Two-level analyses are designed to analyse variables from different levels simultaneously, using a statistical model that properly includes the various dependencies (42).

For all statistical tests, a 5% significance level was employed. We examined the level of collinearity among the independent variables and multicollinearity using the variance inflation factor (VIF) test. The correlations between the independent variables were low to moderate ($r \leq 0.50$) except for the correlation between ward size and staffing levels ($r = 0.66$) (see Table 3). Tests that controlled for the assumptions of linearity, constant variance and normality showed acceptable results.

Results

Physical and social activities had a mean score of 4.31 and general care had a mean score of 5.66 in the range of 1 to 7 (see Table 2). This implies that the staff assessed the activity dimension to be 1.35 points lower than the general care dimension. The four items in the physical and social activities dimension were all considered to be relatively low. The six items in the general care dimension were assessed significantly differently. The item on aspects of end of life care and the item on treatment of pressure ulcers were rated significantly higher than the item on oral care and the item on professional focus among the healthcare staff (Table 2). There was a significant variation in the quality level between the 40 wards (see Table 2 and Fig. 1), particularly for the activities dimension. General care and activities were moderately correlated ($r = 0.46$) (see Table 3), and several wards had high scores on both activities and general care (Fig. 1).

The regression analyses, conducted to explain the variance in the activities and general care between the 40 wards, showed the following results (Table 4): The ‘activity dimension’ was significantly negatively associated with the ratio of unlicensed staff, the ratio of RNs and the residents’ mobility level. The negative effects of these variables were substantial: an increase in the ratio of unlicensed staff from 0.1 to 0.2 resulted in a 0.26-point decrease in

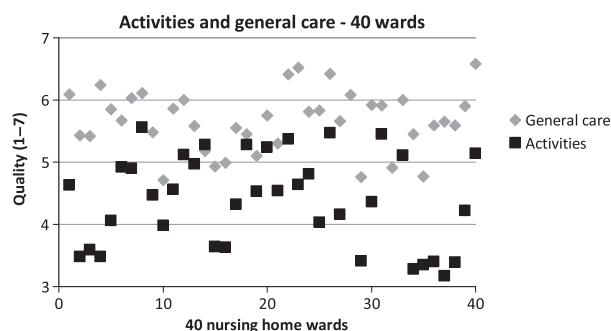


Figure 1 Activities and general care scores at ward level.

Table 4 Multilevel regression analyses (n = 444 staff and 40 wards)

Explanatory variables	Activities		General care	
	Coeff.	Sig.	Coeff.	Sig.
Ward size	0.010	0.520	-0.003	0.710
Ratio of unlicensed staff	-2.594	0.032	-2.151	0.005
Staffing levels	-2.539	0.153	0.474	0.660
Ratio of RN	-3.112	0.007	0.289	0.663
Residents’ mobility level	-0.142	0.038	-0.006	0.889

Significant variables in bold.

activities, an increase in the ratio of RNs from 0.1 to 0.2 resulted in a 0.31-point decrease and an increase in the residents’ mobility level from group 1 to group 2 resulted in a 0.14-point decrease. General care was significantly negatively related to the ratio of unlicensed staff. The negative effect of unlicensed staff was substantial: an increase in the ratio from 0.1 to 0.2 resulted in a 0.22-point decrease in the quality assessment. Ward size and total staffing levels showed no significant association with either of the two quality dimensions.

Discussion

Our study shows that the staff in the 40 participating nursing home wards assessed the level of physical and social activities to be relatively low (4.31) and the general care to be relatively high (5.66) (scale ranging from 1 to 7). The explanatory variables, included to explain

Table 3 Correlations – general care, activities and explanatory variables (n = 40 wards)

	General care	Activities	Ward size	Staffing levels	Ratio of RN	Ratio of u. staff	Residents’ mobility level
General care	1						
Activities	0.458**	1					
Ward size	-0.266	0.015	1				
Staffing levels	0.160	-0.156	-0.655**	1			
Ratio of RN	0.180	-0.345*	0.094	-0.140	1		
Ratio of unlicensed staff	-0.456**	-0.079	0.281	-0.089	-0.303	1	
Residents’ mobility level	-0.013	-0.235	0.503**	-0.399**	0.260	-0.201	1

**Correlation is significant at the 0.01 level (two-tailed).

*Correlation is significant at the 0.05 level (two-tailed).

the variance in quality level between the wards, showed the following results: higher level of immobile residents was negatively associated with activities, higher ratio of RNs was negatively associated with activities, higher ratio of unlicensed staff was negatively associated with both activities and general care, and ward size and total staffing levels were not significantly associated with either of the two quality dimensions. Regarding the general care dimension, it should be emphasised that the six items included in this dimension were rated somewhat differently. The items related to aspects of end of life care and treatment of pressure ulcers were assessed to be at a high level with a mean score above 6, while the items related to oral care and professional focus on the ward were assessed to be at a significantly lower level. The relatively high score for the items about end of life care and pressure ulcers, the more medical items in the questionnaire, indicates that the medical care in Norwegian nursing homes is at a fairly high level. An interesting finding was that the two quality dimensions, and particularly the activities dimension, varied considerably among the 40 wards included in our study. Another interesting finding was that several nursing homes scored high on both activities and general care, showing that the two dimensions are not mutually exclusive and that it is possible to have both a high level of general care and a high level of physical and social activities at a nursing home.

Although several nursing home wards had a fairly high level of activities, the mean score shows that, overall, the number of activities offered to the residents was limited. This finding is in line with earlier Norwegian studies (15–17, 20, 21) and implies that we did not find evidence to support an increase in physical and social activities in nursing homes in recent years. Hence, based on our findings, we may conclude that the government, through its various regulations, campaigns and focus in white papers and circulars, has not succeeded – at least not fully – in introducing more activities into Norwegian nursing homes in the first years after the launch of the ‘Care Plan 2015’.

The explanatory variables, included to explain the difference in quality between the wards, had interesting associations with the two quality outcomes. The negative association between immobile residents and activities, implying that higher ratios of immobile residents result in less activities, was in line with previous Norwegian research (17).

There may be several reasons why wards with higher levels of immobile residents have a lower level of activities. One explanation could be that the staffs have less time to offer activities if the residents have low mobility, as the work related to general care activities is likely to increase with high ratios of immobile residents. Another explanation could be that the type of activities offered at nursing homes has traditionally been customised for residents with a relatively high level of mobility. A third

explanation could be that immobile residents are less able, motivated and interested in activities than more mobile residents. Whatever the reason, the finding is interesting and should be studied in future research. It is unfortunate that immobile residents are offered fewer activities than residents with a higher functional level, as they might well derive the same pleasure from activities as more mobile residents.

The negative effect of unlicensed staff on both the general care and activities was in line with previous studies (17, 34) and underlines the importance of minimising the use of unlicensed staff in nursing homes. However, high ratios of unlicensed staff tend to correlate with low staff stability and high turnover, both of which have shown to be negative for quality of care (43). The challenges related to high ratios of unlicensed staff are therefore likely to be complex.

The lack of a significant positive effect of RNs on the general care was unexpected. Intuitively, a higher number of RNs are related to higher quality, and international research has found some support for a positive effect of more RNs (34, 35, 44). Regarding RNs, it is, however, reasonable to assume that the positive effects may not be linear at all staff levels, that is there might be a decreasing marginal productivity. This means that the effect curve flattens out and that the positive effect of an increased ratio of RNs on quality of care decreases above a certain level (45). In our study, 27% of the care staff directly involved in care activities were RNs. This is a considerably higher level of RNs than in other European (46–48) and U.S. nursing homes (16, 21, 40, 49–52). The negative relationship between RNs and activities may be explained by the fact that RNs are trained in the more medical aspects of the quality concept; thus, their focus on medical treatment may lead to a lower focus on activities.

The absence of a significant relationship between total staffing levels and the two quality outcomes was unexpected. As for RNs, higher staffing levels are intuitively related to higher quality, and earlier research has indicated a positive relationship between higher staffing levels and nursing home quality (34,35). However, as is the case for RNs, it is likely to be a decreasing marginal productivity of staffing levels, that is that the positive effect of higher staffing levels will decrease after a certain level is reached. Norway has relatively high staffing levels compared to most other countries (53), which might, in part, explain the lack of effect of staffing levels in our study.

Ward size showed no significant relationship with any of the quality outcomes. This finding is in contrast to a previous Norwegian study that found a positive relationship between small wards (<12 beds) and daily care and activities (17). In international studies, the results are more mixed (see Introduction), although there is some evidence for a relationship between small wards and higher quality for residents with severe

dementia (54). This lack of a relationship between wards size and any of the two quality items is interesting considering the Government's continuing focus on small wards (37, 38).

Possible explanations for low level of activities in Norwegian nursing homes

The low level of physical and social activities in Norwegian nursing homes revealed in our – and previous – studies raises an interesting question: Why is the level of activities assessed to be so low despite the government's ongoing effort to increase it? Below we will propose two factors that may shed light on this failure: 'the residents' extensive care needs' and a "medical focus on Norwegian nursing homes'.

In 1988, the responsibility for financing and operating the nursing homes was transferred from the counties ($n = 19$) to the municipalities ($n = 427$). Since then, most of the municipalities have prioritised increasing the amount of sheltered housing and strengthening the home healthcare services at the expense of building new nursing homes (55, 56). This has resulted in a decrease in the number of nursing home beds, both in absolute and relative terms. Consequently, the residents' functional level has been significantly lower in recent years (21, 56). The decrease in functional level may have two consequences: first, it may entail that the residents are offered fewer activities as their low functional level makes them less able and motivated to take part in activities; second, the higher workloads that accompany residents with a lower functional level are likely to lead to an increased focus on daily care and medical treatment – at the expense of activities (20). The latter is in line with Lipsky's theory about street-level bureaucracy, which suggests that staff exposed to a high workload have to prioritise their basic routines tasks when the workload increases (57). The two possible explanations were tested in our study as both the residents' mobility level and the staffing level were included as explanatory variables in the regression analysis. The first possible explanation (regarding the residents' care needs) was supported – as wards with more immobile residents had a lower level of activities. The second possible explanation (regarding increased workload) was not supported – as there was no significant relationship found between total staffing levels and activities.

In addition to the low functional level among nursing home residents, the traditional focus on medical aspects in nursing homes (10, 25, 26, 28) may lead to a lower focus on activities. In Norway, the medical focus may be traced back to the post-war period in which nursing homes had to function like small hospitals, giving medical treatment and occupational therapy to patients who had recently undergone hospital treatment (58, 59). Today, the medical focus is emphasised by 'The

Coordination Reform' (60), which aims to increase the medical treatment in nursing homes. In our study, the theory that a medical focus results in fewer activities was supported by the negative association between higher ratios of RNs, an indicator of the medical focus on the ward and activities.

Limitations and strengths

Our study has several limitations. First, the sample size is limited and a larger sample size would have improved the study. Second, the inclusion of quality data from other sources, such as minimum data set or registry data about complaints or inspections, would have strengthened the quality data. Third, the high ratio of sick leave and vacant positions in nursing homes makes the staffing data uncertain. If we had used data from the payroll system, we would have had the actual rather than the planned staffing mix. However, such data are not available. Fourth, a more advanced method of measuring residents' functional level would have strengthened the study. Finally, the data were collected from September 2007 to October 2008. Including more recent data would have strengthened the study.

The study has also several strengths. First, a relatively high number of nursing home wards were included in the study (40 wards); second, nursing home throughout Norway (11 municipalities) were included; third, the response rate (87%) was high. Finally, the quality of explanatory variables was high as we collected all the data ourselves during visits at each of the 40 nursing home wards.

Conclusion

Our study shows that care staffs assess the general care in Norwegian nursing homes to be at a relatively high level, while they assess the level of activities offered to the residents to be at a significantly lower level. The result is in line with earlier Norwegian research and shows that the government has not succeeded with its current politics to increase the level of activities in nursing homes.

The findings further show that higher staffing levels are not automatically associated with more activities, that higher levels of unlicensed staff are negatively associated with activities as well as with general care, and that RNs, with their medical focus, may reduce the level of activities in nursing homes.

Thus, our study suggests that increasing the level of activities in nursing homes is a complex matter and that a fundamental change in staff culture may be necessary. To increase the levels of activities, a first step could be to investigate what characterises the successful nursing home wards. As our study shows, some nursing home wards have both a high level of general care and a high

level of activities, showing that it is possible to combine the two quality dimensions and that they are not mutually exclusive.

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Author contribution

The authors have contributed to designing the project, to the analyses and writing of the manuscript. The second author has collected the data.

Ethical approval

The study has been approved by the Norwegian Social Science Data Services (NSD), ref. 37637, an institution

that approves and assists researchers with data gathering, data analysis, privacy issues and research ethics. All data in the study were anonymous, and no separate data about any residents were collected. Consent procedures for this study were approved by staff and residents. Consent procedures included a description of the study and measures taken to ensure confidentiality and the voluntary nature of the study.

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